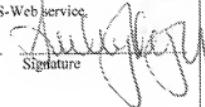


**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re: Chevillard § Atty. Dkt. No.: COS-955  
Serial No.: 10/766,672 §  
Confirmation No.: 3031 § Group Art Unit: 1732  
Filed: January 28, 2004 § Cust. No.: 25264  
For: Method to Improve Melt Processing § Examiner: Wollschlager  
of Styrenic Resins at High Shear §  
Rates §  
§  
§  
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§  
§  
§

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Honorable Commissioner:

<b>CERTIFICATE OF EFS-WEB TRANSMISSION</b> <small>37 CFR 1.10</small>	
I hereby certify that this correspondence is being deposited on the date below with the United States Patent Office via the EFS-Web service.	
10/5/09 Date	 Signature

**APPEAL BRIEF**

Appellants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 1791 dated March 3, 2009, finally rejecting claims 2, 4-5 and 26-34.

**Real Party in Interest**

The present application has been assigned to Fina Technology Inc., P.O. Box 674412, Houston, Texas 77267.

**Related Appeals and Interferences**

Appellants assert that no other appeals, interferences or judicial proceedings are known to the Appellants, the Appellants' legal representative or Assignee that will

directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

#### **Status of Claims**

Claims 1-24 were originally presented in the application. Claims 8-24 were withdrawn and claims 25-30 were added in Response to the Office Action dated June 14, 2007. Claims 1, 3 and 6-7 were cancelled, claim 25 was withdrawn and claims 31-33 were added in Response to the Office Action dated January 24, 2008. Claim 34 was added in Response to the Office Action dated August 13, 2008. Accordingly, claims 2, 4-5 and 26-34 are pending in the application and stand rejected under 35 U.S.C. §112, first paragraph and 35 U.S.C. §103(a). The rejection of the pending claims is appealed. The pending claims are shown in the attached Appendix A.

#### **Status of Amendments**

No amendments have been made to the pending claims in Response to the final Office Action.

#### **Summary of Claimed Subject Matter**

Independent claim 31 recites a method of melt processing polystyrene comprising providing high impact polystyrene (HIPS), melt blending the HIPS with a second polymer exhibiting a melt flow index (MFI) of from about 20 g/10 min. to about 40 g/10 min. as measured by ASTM D1238 condition g to form modified HIPS, wherein the modified HIPS comprises greater than 50 wt.% HIPS and melt processing the modified HIPS to form a polystyrene article. *See, Specification, at least page 3, lines 2-7 and page 7, lines 3-9.*

Dependent claim 32 recites that the modified HIPS consists essentially of the HIPS and the second polymer. *See, Specification, at least page 3, lines 2-7, page 7, lines 3-9 and Examples.*

Dependent claim 29 recites that the article has a flexural strength of from 8000 psi to 10500 psi. *See, Specification, at least page 3, lines 2-7, page 7, lines 3-9 and Examples.*

Dependent claim 28 recites that the article has an Izod of from 0.8 to 1.7 ft-lb/in. *See*, Specification, at least page 3, lines 2-7, page 7, lines 3-9 and Examples.

#### **Grounds of Rejection to be Reviewed on Appeal**

1. The rejection of claims 2, 4-5 and 26-34 under 35 U.S.C. §112, first paragraph.

2. The rejection of claims 2, 4 and 26-34 under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 4,188,432 (*Holden*).

3. The rejection of claim 5 under 35 U.S.C. §103(a) as being unpatentable over *Holden* in view of U.S. Pat. No. 5,542,851 (*Argawal*) and U.S. Pat. No. 6,713,141 (*Kaulbach*).

#### **Arguments**

##### **I. THE EXAMINER ERRED IN REJECTING CLAIMS 2, 4-5 AND 26-34 UNDER 35 U.S.C. §112, FIRST PARAGRAPH.**

The Examiner asserts that the ASTM method recited in claim 31 is not supported by the original disclosure. Appellants disagree. The original disclosure incorporates U.S. Pat. No. 5,540,813. *See*, page 1, line 22. U.S. Pat. No. 5,540,813 clearly indicates the melt flow rate (MFI) is measured by ASTM 1238 condition g. *See*, Table III. Therefore, reversal of the rejection is respectfully requested.

##### **II. THE EXAMINER ERRED IN REJECTING CLAIMS 2, 4 AND 26-34 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER HOLDEN.**

*Holden* teaches optimizing three component blends (polystyrene graft copolymer component, a polyolefin component and a block copolymer component). The blends are prepared by dry-blending the ingredients, which dry blended mixture may then be passed through an extruder. *See*, column 9, lines 58-65. *Holden* does not teach, show or suggest melt blending a polymer having a MFI of from 20 to 40 with High Impact Polystyrene, as recited by the pending claims. The Examiner argues that “mixing dry materials together and then adding those materials to an extruder to melt and mix them in the melt phase clearly meets the requirement to melt blend”. *See*, Final Office Action at page 9, first full

paragraph. “It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known”. *See*, MPEP §2144.03. Appellants submit that the Examiner does not cite a reference for the assertion of such. Further, while the Examiner asserts that “extrusion is a melt blending technique”, the Examiner neglects to appreciate that *Holden* teaches dry blending to form the mixture, the mixture is then extruded to form a melt. Such does not teach, show or suggest melt blending, as claimed. Rather, *Holden* teaches melt processing the dry-blend to form a film.

*Holden* further teaches that the graft copolymer component “A” may be a mixture of high impact polystyrene (HIPS) and general purpose styrene homopolymer. While *Holden* broadly teaches that the general purpose styrene homopolymer may have a melt flow index of from 5-25, all of the examples teach MFI well below the claimed 20 to 40 g/10 min. *See*, Examples and Table 7. Accordingly, Appellants respectfully submit that *Holden* does not teach critical claimed features with sufficient specificity to render the pending claims obvious. Specifically, *Holden* does not teach, show or suggest a second polymer exhibiting a melt flow index (MFI) of from about 20 g/10 min. to about 40 g/10 min., nor does *Holden* teach, show or suggest a modified HIPS comprising greater than 50 wt.% HIPS, as recited by the pending claims.

Furthermore, *Holden* teaches that components “B” (polyolefin) and “C” (block copolymer) are essential components. In contrast, claim 32 recites that the modified HIPS consists essentially of the HIPS and the second polymer. In addition, the blends of *Holden* exhibit flexural strengths below that of 8000 psi claimed in pending claim 29 and Izod Impacts significantly greater than claimed in claim 28. *See*, Table 3, I-A and I-B. Accordingly, Appellants respectfully request reversal of the rejection.

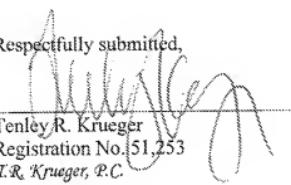
**III. THE EXAMINER ERRED IN REJECTING CLAIM 5 UNDER 35 U.S.C. §103(a)  
AS BEING UNPATENTABLE OVER HOLDEN IN VIEW OF ARGAWAL AND  
KAULBACH.**

The prior art made of record is noted. However, it is believed that the secondary references do not supply the features missing from *Holden*. For the reasons set forth above, Appellants respectfully request reversal of the rejection.

**Conclusion**

In conclusion, the references of record nowhere teach, show or suggest the features of the pending claims. Thus, Appellants respectfully request reversal of the rejections of claims 2, 4-5 and 26-34.

Respectfully submitted,

  
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**Appendix A**  
**Pending Claims**

2. The method of claim 31, wherein the HIPS has a MFI ranging from about 1.5 g/10 min. to about 15 g/10 min., as measured by ASTM D1238 condition g.

4. The method of claim 31, where the article exhibits improved melt stability as compared with a product made from the HIPS without the second polymer, and wherein a melt instability of an extruded polymer sample is measured according to the Equation 1:

$$\kappa_{sample} = \frac{UPL_{sample} - LPL_{sample}}{UPL_{control} - LPL_{control}} \quad (\text{Equation 1})$$

wherein UPL<sub>control</sub> is the Upper Prediction Limit of a control polymer having high melt instability extrapolated to a drawing speed equal to zero, wherein LPL<sub>control</sub> is the Lower Prediction Limit of the control polymer extrapolated to a drawing speed equal to zero, wherein UPL<sub>sample</sub> is the Upper Prediction Limit of the extruded polymer sample extrapolated to a drawing speed equal to zero, wherein LPL<sub>sample</sub> is the Lower Prediction Limit of the extruded polymer sample extrapolated to a drawing speed equal to zero, and wherein  $\kappa_{sample}$  closer to 1 indicates a relatively unstable extruded polymer sample and a  $\kappa_{sample}$  closer to 0 indicates a relatively stable extruded polymer sample.

5. The method of claim 31, where the article is extruded at a shear rate from about 1,000 to about 15,000 s<sup>-1</sup>.

26. The method of claim 31 where the article has a melt strength [N] of from 0.01 to 0.035.

27. The method of claim 31 where the article has an instability kappa of from 0.2 to 0.045.

28. The method of claim 31 where the article has an Izod of from 0.8 to 1.7 ft-lb/in.

29. The method of claim 31 where the article has a flexural strength of from 8000 psi to 10500 psi.

30. The method of claim 31 where the article has a Z average molecular weight ( $M_z$ ) of from about 300,000 to 600,000.

31. A method of melt processing polystyrene comprising:  
providing high impact polystyrene (HIPS);  
melt blending the HIPS with a second polymer exhibiting a melt flow index (MFI) of from about 20 g/10 min. to about 40 g/10 min. as measured by ASTM D1238 condition g to form modified HIPS, wherein the modified HIPS comprises greater than 50 wt.% HIPS; and  
melt processing the modified HIPS to form a polystyrene article.

32. The method of claim 31, wherein the modified HIPS consists essentially of the HIPS and the second polymer.

33. The method of claim 31, wherein the modified HIPS comprises from about 10 wt.% to about 30 wt.% second polymer.

34. The method of claim 31, wherein the melt processing comprises extrusion.

## **Appendix B**

### *Evidence*

Not Applicable

**Appendix C**  
*Related Proceedings*

Not Applicable